Amendments to the Specification:

[0005] The present invention provides an optical ~~tag~~ tap which provides a laser-based free-space-optical communication between remote identities such as airborne platforms and unattended ground sensors or airborne platforms and soldiers on the ground. Such communication has a low probability of being intercepted or jammed. The optical tap can be fabricated inexpensively by commercially available components. In addition, the optical tag is physically small, but is efficient in power.

[0019] The present invention provides a small and inexpensive optical tag operative to respond a specific optical signal generated by an overhead flier or airborne platform. Figure 1 shows an interrogating system including such optical tag. As shown, the interrogating system includes an airborne platform 20 such as an unmanned aerial vehicle (UAV) to continuously scan a field with an optical signal 22, preferably a 1.55 μm laser beam. When a target 10 in the field having an optical tag 14 programmed to respond to the optical signal 22 with an identification code is scanned by the optical signal 22, a retro-reflection containing the identification code provided by the optical tag 22 is received by the airborne platform 20. When the retro-reflection is received, the scan process is interrupted, and the airborne platform 20 returns to the point where the retro-reflection was received to interrogate the optical tag 10. In the battlefield application, when a link with the optical tag 14 is acquired, and the target 10 is recognized as being friendly from the identification code, the target 10 is then protected from being fired on by the airborne platform 20.

[0027] The present invention further provides a method of interrogating an object in a field as shown in Figure 6. In step 600, an interrogating beam with a predetermined wavelength is generated from a source. In one embodiment, the interrogating beam includes a 1.55 μm laser beam located in an airborne platform flying over a field. The airborne platform is operative to scan the interrogating beam through the field. Once an object such as a vehicle or a soldier wearing an optical tag is moving in the field, the interrogating beam received by the optical tag is converted into a photocurrent in step 602. The step of converting the interrogating beam into the photocurrent includes providing a photo-detector

to generate the photocurrent when the interrogating beam is received thereby. In step 604, a piezoelectric translator is then activated by the photocurrent to generate a mechanical pulse. The pulse is then transferred to a retro-reflective tape onto which the interrogating beam is focused by a ~~Fresnal~~ Fresnel lens. The incident and focused interrogating beam is then modulated with an identification code by the retro-reflective tape according to the pulse in step 606. In step 608, the interrogating beam modulated with the identification code is the retro-reflected to the interrogating beam source.

[0028] Preferably, the method of interrogating an object in a field from an airborne platform further includes the steps of retrieving information or data contained in the interrogating beam, such that the soldier is not only able to respond the interrogating beam with the identification code, but is also able to read or listen to the instruction or command given by the airborne platform. For example, in step 610, an interface is connected to the optical tag for decoding the information or data contained in the photocurrent. The decoded data or information is then retrieved by an earpiece or a display in step 612.